

Indian Agriculture –Issues & Challenges

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Abstract

Purpose- Contribution of agriculture in GDP and employment generation are the critical factors to India's aspirations in the global agricultural economy. Majority of people in India are engaged in agricultural and its related activities for their employment and bread earning but least are being contributed in Indian GDP in comparison to services generated and manufacturing sector. There has been an attempt to find out the main issues, challenges in Indian agriculture sector and to examine the need for focus on agriculture and review basic facts on agriculture.

Methodology- It is a conceptual paper. Explorative & descriptive research design has been used to find out the objectives, secondary data has been used to present facts and figures and for literature review.

Findings- The issues, challenges & future of Indian agriculture sector (i.e primary sector of economy) can be understood through following significant factors i.e Ineffective supply chain management, Influence of unorganized money lenders, Inefficient price control by Government, Diversion of agricultural land for non-agriculture purpose, Biotechnology, Exports, Food processing industry, Destroying of crops by stray animals & Natural calamities Government should keep these factors in focus while making any policy for India's agriculture sector.

Limitations – Findings are based on observations which are novel in nature and literature review. Scope is limited to agriculture sector focuses primarily of North India only. Horticulture and Floriculture has not been studied.

Keywords: Ineffective supply chain management, Influence of unorganized money lenders, inefficient price control by Government, Biotechnology etc.

Introduction

Agriculture is an important sector in India. It is indispensable for the existence and growth of the Indian economy. According to International Monetary Fund World Economic Outlook (October-2018), GDP (nominal) of India in 2018 at current prices has been \$2,690 billion. India contributes 3.17% of total world's GDP in exchange rate basis and shares 17.5 percent of the total world population and 2.4 percent of the world surface area. India is now 7th largest economy of the world. More than 55% of Indian population is engaged in agricultural and its related activities for employment which made India as Agricultural Prime Country. Since Independence (1947), India has made a significant progress in manufacturing and services sector but has not witnessed the growth as desired in agricultural sector.

Table: 1.1 Share of different sectors in India's GDP from 1950-2018 at constant price,

Sector	1950-60	1961-70	1971-80	1981-90	1991=00	2001-10	Year-2018
Agriculture	55.3	47.6	42.8	37.3	30.9	21.8	15.87
Industries (Mfg)	14.8	19.6	21.3	22.3	23.3	24.5	29.73
Services	29.8	32.8	35.9	40.3	45.7	53.7	54.40

Source: Economic survey of India 2011-12, 2018-19 and CSO, MOSPI2018

In fact there has been observed a decline from 55.3% contribution of agricultural sector in 1950 to 15.87 % in 2018, according to economic survey Table 1.1. When it comes to employment, agriculture still employ 56.1% people according to survey by CSO, Table 1.2. Still, agriculture is demographically the broadest economic sector and plays a significant role in the overall socio-economic fabric of India.

Table 1.2: Employment share for different sectors

S.no	Sectors	Employment share of major sectors (yr: 2004)	Employment share of major sectors (yr: 2018)
1	Agriculture	56.1	43.086%
2	Manufacturing	18.8	24.69%
3	Service	25.1	31.45

Source: CCSO and CRISIL, 2004 & Statista 2018 (<https://www.statista.com>)

In Today's scenario, India is a major supplier of several agricultural commodities like tea, coffee, oil meals, rice, spices, fresh fruits, fresh vegetables, meat and marine products to the international market. India is a large producer of several agricultural products. India is the top producer in the world in milk and second largest in wheat and rice. Agricultural production is prone to several risks which affect both producers and end consumers. In order to enhance investment and achieve a sustained increase in production, coherent and integrated long-term strategies and policies are required to reduce risk aversion and build flexibility among Indian rural producers.

India has been placed in a good rank when it comes to production of fruits & vegetables (Table 1.3) and is self-sufficient for other agricultural crops and pulses. F&V together constitute about 92 % of the total horticultural production in India (ASSOCHAM, 2013).

Table 1.3: World production and % share in 2012-13 for fruits & vegetables

FRUITS			VEGETABLES		
Country	Production	Share	Country	Production	Share
China	137066750	21.2	China	573935000	49.5
India	81285334	12.6	India	162186567	14
Brazil	38368678	5.9	USA	35947720	3.1
USA	26548859	4.1	Turkey	27818918	2.4
Indonesia	17744411	2.7	Iran	23485675	2
Philippines	16370976	2.5	Egypt	19825388	1.7
Mexico	15917806	2.5	Russian Federation	16084372	1.4
Turkey	14974561	2.3	Mexico	13599497	1.2
Spain	13996447	2.2	Spain	12531000	1.1
Italy	13889219	2.1	Italy	12297645	1.1
Others	270594597	41.8	Others	261467661	22.6

Source: Indian Horticulture Database, NHB, 2014

The Fruits and Vegetables (F&V) segment has been a driving force in stimulating a healthy growth trend in Indian Agriculture Sector. It plays a unique role in India's economy by improving the income of the rural people. Cultivation of these crops is labor intensive and as such they generate lot of employment opportunities for the rural population. F&V segment is perhaps the most profitable venture of all farming activities as it provides ample employment opportunities and scope to raise the income of the farming community. It also has tremendous potential to push the overall agriculture growth. India has been bestowed with wide range of climate and geographical conditions and as such is most suitable for growing various kinds of F&V. Indian agricultural, horticultural and processed foods are exported to more than 100 countries, primarily in the Middle East, Southeast Asia, SAARC countries, the EU and the United States.

Objectives of Study

- To examine and understand issues and challenges of agriculture sector in North India
- To examine the need for focus on agriculture
- To study policy challenges and suggest good practices

Issues & Challenges for Agriculture Sector in India

Research in agriculture has practical implications for policy and practice, providing an analytical framework for identifying pathways for change that are sustainable and equitable. Specifically, this paper brings together theory and literature that is grounded in concepts in Indian agriculture. The researcher has identified following factors and issues to be addressed for improvement in the agriculture sector.

1. Ineffective Supply Chain Management (SCM)

In India, agriculture supply chain is affected by factors like dominance of small farmers, illiteracy of farmers, fragmented supply chain, absence of scale of economies, low level of processing and value addition, inadequacy of marketing infrastructure etc. While focus has been on improving production, reducing food supply chain losses remains a relatively unaddressed problem till very recently. It is hard to figure out how much food is lost and wasted in India today due to lack of adequate infrastructure, however a report by a UN body reported wastage in fruits and vegetables are high as 45% of produce (post-harvest to distribution) for developing Asian countries like India. (Agri-logistics in India: Challenges and Emerging Solutions). Additional challenges categorized in supply chain management area-**Cold store Chain issues-** India's current cold storage capacity at 25 MT is barely sufficient for 10% of fruit and vegetables produced in the country), Skewed distribution of capacity (North India having access to 60% of the total storage infrastructure). Currently, public sector agencies like the FCI, Central Warehousing Corporations (CWC) and the various State Warehousing Corporations (SWC) have a storage capacity of 71 mn MT, while the private sector has close to 25 mn MT. To put the scarcity in perspective, food grain stocks held only by the government was 80 mn MT last year (peak) according to the FCI annual report 2018). Parwez (2013) has concluded aspects like cold chain needs to be given more consideration as it could result in the reduction of losses and retention of the quality of horticultural produce.

b-Linkage and Integration issues-Limited reach of mandis is a constraint in growth of agriculture. The procurement system has failed to cover the entire country evenly. On an average, a farmer needs to travel 12 kms to reach the nearest mandi and more than 50 kms in NE India however according to the recommendations by National Farmers Commission, availability of markets should be within a 5 km radius.

c-Many intermediaries and information asymmetry-Many intermediaries in agriculture have led to formation of long distribution channels with multiple intermediaries adding to the woes of the producers of perishable agri goods. These intermediaries have led to a cost inflation of ~250% (over the cost of production) and have exacerbated the existing information asymmetries in agriculture, especially for non-MSP crops.

d-Infrastructural issues-Poor road and rail network in rural area has been the roadblock for the growth of agriculture sector. Farmers find it difficult to take their agricultural commodities, vegetables and fruits to Metro cities due to poor infrastructure of rails and roads. Rising road transportation due to increased fuel and toll prices are another woe to this issue.

2 Diversion of Agricultural Land for Non Agricultural Purposes

As rural population is increasing, the number of family members are increasing which is making the size of farms shorter as land gets divided among family members leaving small space for farming and cultivation.

Due to less land availability by farmers, they are losing their interest in agriculture and utilizing fertile land for making their residence. The need of rural people to have small, big houses and farm houses worked as catalyst for conversion of agriculture land to non-agricultural use resulting expansion of villages. According to Agricultural Census 2010-11, there were an estimated 98 million small and marginal holdings out of around 120 million total land households in the country. Indian National Policy for Farmers of 2007 stated that prime farmland must be conserved for agriculture except under exceptional circumstances and land with low farming yields or that is not farmable should be earmarked for non-agricultural purposes such as construction, industrial parks and other commercial development. The average size of holdings in India declined from 2.3 ha. in 1970-71 to 1.33 ha. in 2000-01. It may be noted that 63% of land holdings belong to marginal farmers with less than 1 ha. The average size of marginal holdings is only 0.24 at all India level. Government should think of vertical expansion in rural area also to reduce commercial and non agricultural use of fertile land in villages, Villagers should be given legal rights to sell first floor where sufficient 20 meters roads are there in rural areas. This will prevent people not to occupy new land for constructing new houses for extended family. Also this initiative will provide double ownership rights of same properties.

3- Influence of Unorganized Money Lenders

In rural India, where majority of people are engaged in agricultural activities, they have no documentation to show their creditworthiness to organized financial institutions, they are being lured by local money lenders for their financing needs and in return they charge double or in some cases four-five times of the market price of the existing interest rate from them. There are various reasons for which villagers and farmers approach local money lenders for finance needs. Few of reasons are need of money for their daughter's wedding, loan for education of kids, Not having land titles i.e ownership by actual cultivators, unregistered cultivators, tenants, and tribal cultivators (Mahendra, S, Dev 2008) etc. When farmers, villagers not able to return heavy interest rates to money lenders, they are left with no option other than selling their land to them. Government is trying to enhance the net of organized financial system but still the presence of unorganized money lenders in rural India has been the cause of disturbance for poor farmers or local people. Indian government has launched various financial schemes for the benefits of farmers like Crop loans, Kisan Credit Card, Post Harvest storage loans, Agriculture Insurance at lowest rates etc but still some legal measures should be in place where unorganized money lenders be restricted to charge many fold interest rate on loans provided to them.

4 Inefficient Price Control by Government

There is inefficient price control by Government for approximately 22 crops as on 2018 including Kharif (sown in monsoon season and harvested in start of winter) and Rabi (sown in winter and harvested in spring season) crops. Based on the recommendations of the Commission for Agricultural Costs and Prices (CACP), Department of Agriculture and Co-operation, GOI, declares MSP for before the sowing season. The government has been buying almost one-third of all rice and wheat produced in India through the PDS system, but in other kinds of grains, fruits and vegetables (both being highly perishable), the role of the government is limited. This leads to MSPs being ineffective for the larger agricultural population. (Christopher B. and Emelly, (2014). There are two aspects with regard to price control by Government. One is to control price inflation and ensure food for all Government buy the necessary food commodities through its agencies like FCI (food corporation of India) from farmers by paying them MSP (minimum price support) but that is not sufficient return for farmers. Farmers are not allowed to store and

sell few necessary commodities like wheat etc. as Government need to ensure food for all. This is right decision by the Government. Second aspect is that when entrepreneurs are free to sell goods produced by them at their decided price then why it's not there for farmers. If they cannot be allowed to sell their commodities and agricultural produce, they should be given reasonable price by the Government through subsidies.

5 Access to Water and Irrigation

The irrigation is also a challenge in Indian Agriculture; still agriculture is a gamble of weather in India. However, the access to irrigation has increased for all categories of farmers. According to Bardhan, P. (2000), it is the highest for marginal farmers followed by small farmers. The percentage of area under irrigation for small farmers increased from 40 in 1980-81 to 51 in 2000-01. On the other hand, for large farmers it rose from 16 to 31% during the same period. According to Sivsubramaniyan (1997) with the advent of pumps in the early 1960s, irrigation by groundwater has become the method of prevalence, and continues to grow. Today approximately 50 percent of the irrigated area in India are served by groundwater. However, the decline in groundwater level, water-logging, and the lack of payment for services, particularly the subsidy on cost of pumping, have seriously undermined the advantage of groundwater irrigation. The growth of groundwater irrigation has also been associated with deterioration in the performance of surface irrigation systems including, tank systems. It may, however, be noted that large farmers capitalize on cheaper sources like canals while small farmers have to rent water. About 40 per cent of the irrigation through canals is for large farmers while it is less than 25 per cent in the case of small and marginal farmers (NCEUS, 2008). According to Bansal (1994) In unirrigated areas of low rainfall (<400mm) , generally crops are grown in mixtures or in intercropping .These mixtures consist of 2-7 crops and their main aim is to safe guard against complete crop failure.

Few crops like rice consume more water and has long term water depletion effects on ground water available. Government has kept a cap of sowing this crop once for year in some States to control and maintain ground water level. But farmers have to suffer due to this decision. This problem can be sort out in future through research on rice crop by finding Gm (Genetically modified)crop which consume less water. Natural canals in some North Indian States run on rain water available and are having water evaporation .This can be fixed by making canals cemented .Government has started working aggressively on such projects. It should be done by all States in times to come.

6 Exports Challenges

The growth of some commercial crops has significant potential for promoting exports of agricultural commodities and bringing about faster development of agro-based industries. Thus agriculture not only contributes to overall growth of the economy but also reduces poverty by providing employment and food security to the majority of the population in the country and thus it is the most inclusive growth sectors of the Indian economy. The Five Year Plans also indicates that agricultural development is an important component of faster, more inclusive sustainable growth approach. To focus on growth of agricultural export, Indian farmers need to focus on quality crops, they need to follow international standards when it comes to use of pesticides but in absence of pesticides productivity falls down .That is the reason farmers are not willing to

leave excessive use of pesticides, urea etc. Another challenges are competition from neighboring countries and appreciating international currency i.e dollars in comparison of Indian rupees which is making dent to India's agricultural exports .International Buyers go to another neighboring countries for purchase of agricultural commodities.

7Future of GM Crops through Biotechnologies

The future of agriculture lies in gmcrops. The term biotechnology covers a wide range of scientific techniques and products that can be used in numerous ways to boost and sustain the productivity of crops, livestock, fisheries and forests (Rao and Dev, 2010).Biotechnology is an evolution of traditional agricultural methods. Over the past 10,000 years, people have routinely used their knowledge of plants to enhance agri-food production. Biotechnology i.e genetically modification (GM) is the latest development in the evolution of agricultural methods. Farmers used to rely on plant breeding to add or eliminate specific genetic traits in a plant. Those with desirable characteristics are selected over several generations. The crops and livestock we see today are a result of traditional processing. For example, because of plant breeding, corn today looks nothing like it did one hundred years ago. Although it typically took several growing seasons to produce a plant that expressed a desired traits. Farmers were eventually able to produce crops that were resistant to drought, insect, pests or diseases, possessed stronger stalks to withstand strong winds, produced higher yields. Genetic modification is a more efficient and precise way to achieve the benefits of crop improvement. In India GM cotton is legally allowed .Using new technologies, scientists are now able to pin-point the specific gene responsible for a particular trait and then extract or add that gene to a specific plant. Genetic modification is a more precise technique, where one can be exact in transferring the desired characteristics. In traditional processing one cannot avoid the possibility that other characteristics may also be transferred. (chopra & Kamma, 2016)

8Food Processing Industries

If India needs to enhance agricultural contribution in GDP or has aspirations to be leader in the sector then food processing industry needs to be developed across the country. The Indian food and grocery market is the world's sixth largest, with retail contributing 70 per cent of the sales. Food has also been one of the largest segments in India's retail sector, which was valued at USD 490 billion in 2013 .The Indian food processing industry accounts for 32 per cent of the country's total food market, one of the largest industries in India and is ranked fifth in terms of production, consumption, export and expected growth. It contributes around 14 per cent of manufacturing Gross Domestic Product (GDP), 13 per cent of India's exports and 6 per cent of total industrial investment. Indian food service industry is expected to reach US\$ 78 billion by 2018.The Indian gourmet food market is currently growing at a Compound Annual Growth Rate (CAGR) of 20 per cent. According to Kumar&Basu, (2008) India's food processing industry is far from tapping its full potential as a result of a low rate of technological progress on the onehand and increasing inefficiencies of the firms on the other hand. It is necessary to encourage imports along with R&D to ensure faster technological progress in the Indian food industry. However, the technological possibilities depend on the mode of organization and various economic and institutional factors.Therefore bold institutional changes are to be made side- by- side in order that inefficiency is substantially reduced. The online food ordering business in India is in its nascent stage, but witnessing exponential growth. The organized food business in India is worth US\$ 48 billion of

which food delivery is valued at US\$ 15 billion. With online food delivery players like FoodPanda, Zomato, TinyOwl and Swiggy building scale through partnerships, the organized food business has a huge potential and a promising future. Vision Document-2012 has been prepared by the Ministry of Food Processing Industries in order to promote food processing industries, increase level of processing and exploit the potential of domestic and international market for processed food products. The document envisages trebling the size of investment in the processed food sector by increasing the level of processing of perishables from 6 per cent to 20 per cent, value addition from 20 per cent to 35 per cent and share in global food trade from 1.5 per cent to 3 per cent by 2020. According to the Ministry, an investment of Rs 100,000 crore (US\$ 14.67 billion) would be required in 2020 to achieve these targets.

9 Destroying of Crops by Stray Animals

Crops destroying by stray animals and birds like nearby village pigs, donkeys, buffalos, monkeys and eagles etc in farms affect the production of agricultural commodities which results into loss of farmers. Farmers have to sort out at their own for such problems. No major Government help has been given to farmers. Farmers have to spend a lot on fencing of farms at their own to fight for such problems.

10 Natural Calamities

Natural calamities like drought, flood, heavy rains and other things like disease, pest, insects problems affect the production of agricultural commodities which results into loss of farmers. Food plants of the world are damaged by more than 10,000 species of insects, 30,000 species of weeds, 100,000 diseases (caused by fungi, viruses, bacteria and other microorganisms) and 1000 species of nematodes (Hall, 1995; Dhaliwal et al., 2007). In spite of a variety of control measures applied against pests, crop losses have consistently shown an increasing trend (Dhaliwal and Koul, 2010). The climate change exerts a profound effect on the intensity of pest problems (Ramamurthy et al., 2009). Agriculture in Rajasthan, Bihar, some part of UP are affected by such problems which is a challenge for farmers. Rivers like Ganga, Yamuna flood nearby areas in some part of country due to which huge losses are borne by farmers.

Table 1.4. Current global losses (%) due to various categories of pests in major crops

Crop Animal pests Weeds Pathogens Viruses Total

Cotton	12.3	8.6	7.2	0.7	28.8
Maize	9.6	10.5	8.5	2.7	31.3
Potatoes	10.9	8.3	14.5	6.4	40.3
Rice	15.1	10.2	10.8	1.4	37.5
Soybean	8.8	7.5	8.9	1.2	26.4
Wheat	7.9	7.7	10.2	2.4	28.2
Average	10.8	8.8	10.0	2.5	32.1

Source: Oerke (2006)

11 Rising Labour Cost

The rise in labour cost in agriculture has also contributed creating woes to Indian farmers. Labourers from state like Bihar and eastern UP come for temporarily employment in Haryana, Punjab and western UP. There are many Government schemes like MNREGA scheme which provide rural employment of minimum 90

days to labourers and rise in income level of labourers encouraging them to look for employment in their home states and not to work.

Conclusion and Suggestions

The Indian agriculture can be well understood by studying the factors i.e., Ineffective supply chain management, Influence of unorganized money lenders, Inefficient price control by Government, Diversion of agricultural land for non-agriculture purpose, future of GM crops through biotechnologies, exports, Food processing industry, Destroying of crops by stray animals, Natural calamities and Rising labour cost. Government should keep these factors in focus while making any policies for agriculture sector. India needs to work out the best and optimized solutions for these significant factors which came out by the research and only then India would be able to lead the Global agricultural economy. Newly launched scheme of central Government in 2019 providing Rs 6000 annually to farmers having less than 5 acres and providing subsidize neem coated urea has been seen as good move to address problems of Indian farmers. Agriculture and food sectors need huge investment in research, education, extension, irrigation, fertilizers, and laboratories to test soil, water, and commodities, and warehousing and cold storage. Rationalization of subsidies and better targeting of subsidies would generate part of the resources for public investment. There are wide differences in yields between states. Even the best of states have much lower yield in different crops when compared to the best in the world. This provides ample opportunity to increase production by bridging the yield gap to the extent feasible within the climatic zone. Providing irrigation can improve yield substantially, as vast cropped area is still unirrigated. For a shift in production function, investment in basic research would be necessary. Every effort should be made to bring states on board for creating a national common market for agricultural commodities. Contract farming has emerged as a new mechanism by mechanism for promoting rural economic development that is favoured by the state, alongside considerable private sector support. (Sreymom & Pirom, 2015). Eaton & Shepherd (2001). In the backdrop of above mentioned factors Government should examine why the focus be on agriculture sector.

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